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EXAMINER

DAGER, JONATHAN M

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/650,008	Applicant(s) DWYER, DAVID B.	
	Examiner JONATHAN M. DAGER	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-24 is/are pending in the application.
- 4a) Of the above claim(s) 2, 13-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10 August 2009 has been entered.

Response to Arguments

2. Applicant's arguments, see pages 6-7 filed 10 August 2009, with respect to the rejection of claim 1 under 35 U.S.C. 103(a) have been fully considered and are persuasive due to amendment. Therefore, the rejection of claim 1 under 35 U.S.C. 103(a) has been withdrawn.

Subsequently, the prior art rejections of all claims dependent therefrom are withdrawn.

However, upon further consideration, new grounds of rejection are warranted (see below).

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1 and 3-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murray (US 5,842,142), and further in view of Riley (US 5,844,503).

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Regarding claims 1, 3-5, and 9, Murray discloses that FIG. 1 is a pictorial diagram of the face of a control and display unit (CDU) 30 that is typically used in commercial aircraft as an interface to a flight management computer system. One of the functions of an aircraft's flight management computer system is to perform navigation functions. The flight management computer typically stores a predetermined flight plan in memory, and tracks the current location of the aircraft along the flight plan from the originating airport to the destination airport. To accurately monitor the aircraft's location, the flight management computer receives data from a variety of aircraft subsystems and sensors that are well known in the aircraft art. Flight management computers and CDUs are well known in the aircraft art, so the following disclosure will not discuss the specific implementation of the flight management computer and CDU except as required to disclose the present invention. Further details of the cooperation of the flight management computer and the CDU may be found in U.S. Pat. No. 5,398,186, entitled "Alternate Destination Predictor for Aircraft" (expressly incorporated herein by reference).

The CDU acts as an interface to the flight management computer, and includes a display 32 and a keyboard 34 to allow the aircraft pilot to selectively view and manipulate navigation and other data. As shown in FIG. 1, the display 32 of the CDU 30 includes a central display area 36 in which data is displayed to the pilot. Above the central display area 36 is an area 36a in which a data status block is displayed, an area 36b in which a title of the screen is displayed, and an area 36c on which a page number of the screen is displayed. In order to identify and manipulate data on the screen, two sets of keys are disposed on either side of the central area of the display. A first set of keys, identified as 1L through 6L, is disposed on the left side of the display area 36, and a second set of keys, identified as 1R through 6R, is disposed on the right

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side. Each key corresponds to a display line which makes up the central display area 36 of the CDU. Pressing one of the keys on the left side or the right side of the display area typically implements a function that is displayed in the central area 36 immediately adjacent to the key that is depressed. A pilot may also enter data into the CDU using a set of alphanumeric keys 34. Data entered by the pilot is first displayed in a scratch pad area 38 located beneath the central display area 36. After entry into the scratch pad area, the pilot may move the data to a particular line of the central display area 36 by depressing one of the left keys, 1L through 6L, or right keys, 1R through 6R. The data contained in the scratch pad area is then typically moved to a position adjacent to the key that was depressed (column 5 lines 33-67, column 6 lines 1-13).

Thus, Murray is disclosing that the processing system of the invention is configured to receive data representative of a current aircraft flight plan, and a display coupled to receive flight plan display commands.

Murray discloses that the alternate destination planner of the present invention also includes the capability of loading alternate destination data that is transmitted via air-ground data link from a ground station to the aircraft during flight. FIGS. 7A, 7B, and 7C show a series of representative data screens that may be accessed by the pilot on the CDU in order to request and receive ground station data. To request data about routing options and operating conditions for the four alternate destinations displayed on the alternate destination summary page (see screen 300 of FIG. 6A), a pilot presses key 5L, labeled as "ALTN REQUEST." Pressing the 5L key transmits a request from the aircraft to the ground station for updated information about each of the four alternate destinations displayed on the summary page. As shown in representative first screen 320 in FIG. 7A, after depressing the key the text adjacent the key changes to

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"REQUESTING," indicating that the downlink request has been transmitted. As shown in a second screen 322, the text changes to "REQUEST SENT" upon receipt from the ground station of an acknowledgment of the request. The coding and transmission of information between an aircraft and a ground station is well known in the art (column 19 lines 30-51).

Further, Murray discloses that in a preferred embodiment of the alternate destination planner, the ground station may transmit to the aircraft a new list of up to four alternates along with a priority of the alternates. For each alternate, the ground station may transmit a value of the wind, outside air temperature, and overhead diversion waypoint. Additionally, a single diversion speed, altitude, and offset distance for all alternates may be uplinked from the ground station. Upon receipt of the requested information from the ground station, the alternate destination summary page is updated as shown in a representative third screen 324 in FIG. 7B. The numbers above each of the alternate destination identifiers indicate the priority of the alternate destinations as selected by the transmitting ground station. The pilot has the option of receiving the entirety of the uplinked data by pressing key 6R, or rejecting the entirety of the uplinked data by pressing key 6L. As shown in representative fourth screen 326, the pilot may view the individual alternate destination data before deciding whether to accept or reject the uplinked data. It will be appreciated that until the pilot accepts or rejects the uplinked data, the pilot may not divert the aircraft to an alternate destination. During the uplink accept/reject period, the DIVERT NOW alternative is removed from both the summary alternate destination page and the individual alternate destination page (column 19 lines 52-67, column 20 lines 1-9).

Thus, Murray is disclosing an aircraft flight management display system for displaying the textual ATC information which is transmitted to the aircraft. The above combined citations

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also disclose that the processor is configured for receiving data representative of one or more textual message signals representative of the textual air traffic control messages transmitted to the aircraft. Further, the above combined citations discloses that the processor, in response to received messages, determines if at least one of the textual ATC messages indicates the current flight plan should be modified to a modified aircraft flight plan.

Murray further discloses that In accordance with another aspect of the alternate destination planner disclosed herein, in addition to providing a text listing of the alternate destinations available for diversion, the alternate destination planner also provides a graphical display of the location of the alternate destinations with respect to the current flight plan. FIG. 8 is a pictorial diagram of a representative screen of a navigation display 350 that is coupled to the alternate destination planner through the flight management computer. As those skilled in the art will appreciate, the depicted screen of the navigation display includes an aircraft icon 358 indicating the position and orientation of the aircraft containing the display and a rotating compass scale 352 from which the current heading of the aircraft can be ascertained. A distance scale 353 is also provided to allow a pilot to judge the distances to locations represented on the navigation screen. It will be appreciated that other screens may be generated on the typical navigation display other than the one shown in FIG. 8 (column 20 lines 35-53).

In cooperation with the flight management computer, the alternate destination planner disclosed herein provides a visual display of the alternate destinations that are within the range of the area represented on the navigation display. In particular, for each alternate destination, the alternate destination planner generates a destination icon 360 on the navigation display. The destination icon 360 consists of an "A" in a circle and an adjacent listing of the ICAO destination

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identifier. It will be appreciated that depending upon the scale of the navigation display and the number of alternate destinations in the area surrounding the aircraft, a greater or lesser number of alternate destinations may be displayed on the screen. Moreover, in a preferred embodiment of the alternate destination planner, a pilot may toggle a switch to display either the closest alternate destination or all four of the alternate destinations contained in the alternate destination summary list (column 20 lines 66-67, column 21 lines 1-14).

Thus, it is disclosed that the processor is configured to, when receiving ATC messages, supply one or more flight plan display commands and one or more textual message display commands, as well as anticipating the display presenting the textual ATC messages and configured, in response thereto, to display one or more images of the current flight plan, text ATC messages transmitted to the aircraft, one or more images of the modified flight plan when at least one of the textual ATC messages indicates that the current flight plan should be modified.

While the invention of Murray certainly suggests that the ATC messages may be clearance messages, this embodiment is not explicitly disclosed. Further, it is not explicitly disclosed wherein the modified aircraft flight plan is simultaneously displayed with the ATC clearance data.

Riley, in a flight planning device similar to that of Murray, teaches a method and apparatus using a simplified language consistent with air traffic control syntax for inputting, displaying and controlling the operation of a flight management system of an aircraft to comply with the instructions received by the pilot from the air traffic controller (abstract).

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Riley teaches that while the number of possible instructions which a pilot may receive is very large, nearly all of them can be split into a relatively small number of sub instructions falling into "action", "target" and "parameter" categories. "Actions" may be thought of as verbs (go, follow, select etc.), and prepositions (to, between, from, above etc.). "Targets" may be thought of as nouns (fuel, distance, temperature, airspeed, altitude, heading, plan, etc.). "Parameters" are the units of some of the nouns (pounds, miles, degrees Celsius etc.). Sentences made up of these commands resemble the syntax used by air traffic controllers as found in the Air Traffic Control Manual "Air Traffic Controllers Handbook--FAA Document 7110.65" As such, they are much easier for the pilot to use and understand. If, for example a simple instruction required the pilot to change his altitude, or change his heading, etc. the simplified command "TO" can be understood by computer to indicate that a change in one of the aircraft variables is to follow. After pushing the action command "TO" button on the control panel in front of him, (preferably in a "head up" area such as the "glare shield" area at the bottom of the windshield), the word "TO" is displayed on a display located on the control panel (or on the navigation display.). Subsequently, a second command can be entered which may be a noun such as a new altitude, new heading, new speed etc. If necessary, a parameter command may be also added such as feet, degrees, knots etc. The second, and subsequent commands selected by the pilot are added to the "TO" displayed on a monitor so that a display of the overall desired action is shown "TO-25,000-FEET". When the pilot is satisfied from the monitor that the desired commands are correct and of the proper air traffic control syntax, he may activate the execute command and the Flight Management Computer, which will be programmed to recognize the

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proper syntax, will begin to operate on these commands and produce outputs which will cause the desired maneuver to be accomplished (column 2 lines 8-42).

Thus, Riley is teaching receiving clearance messages from ATC, and having the pilot use an automated system to enter the clearance data.

Riley teaches that in fig. 2 a partly standard navigation display 100 is shown having a semicircular dial 102 for showing the present heading by the position of a small square area 104 at the top and a map section 106 showing the path of the aircraft and the locations of various waypoints such as a dot 108 which might represent the waypoint SRP. In addition there are 6 "on screen" buttons which have been added for use with the present invention. The first is an "ACTION" button in the upper left portion of the display 100, which, when activated, produces a menu on the display showing a complete list of the various action categories available (column 4 lines 46-56). At the bottom of the display 100 are two long sections labeled "LAST" and "NEXT" for displaying the commands in a manner like that described in display 40 of FIG. 1. The "LAST" section displays the last set of commands entered into the system and the "NEXT" section displays the next set of commands to be entered into the system. As can be seen, the "NEXT" section is displaying "TO HOLD AT 25 MI SW FROM SRP WITH RIGHT TURN AND 2 MIN LEG" which is the command of the example above (column 7 lines 57-65).

Thus, in the combined embodiments, it is clearly taught wherein it is simultaneously displayed the ATC clearance data and the modified aircraft flight plan.

Riley teaches that in addition to the control panel 10 and the display 100, there may be other means to enter data for display on the monitors and to be entered into the computer. A keyboard is usually associated with a flight management system and may be used to make

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entries. Voice commands are possible inputs and preexisting commands built in to the flight plan may also be displayed and inputted to the computer. It may be possible for the air traffic controller to directly input data into the system. Accordingly, the use of the control panel and the heading display herein is to be considered exemplary and not limiting to the invention (column 8 lines 6-15).

Thus, Riley is teaching that improvements, such as the data link capability as proposed by Murray, is capable of use with the invention as described by Riley.

Murray has disclosed a base invention which is capable of all functions of the claimed embodiments, including wirelessly receiving ATC instructions for presentation on an aircraft display. Where Murray is deficient, with respect to claim 1 is that Murray does not explicitly disclose simultaneously displaying the clearance data with the modified aircraft flight plan. Riley cures the deficiency.

Thus, since both inventions both disclose/teach similar elements and usage, it would have been obvious to one of ordinary skill in the art at the time of the invention to simply substitute one apparatus into the other, or at least combine their respective elements, to achieve no more than the predictable result of an aircraft flight management display configured for presentation of a modified aircraft flight plan with the ATC textual clearance message to reduce pilot heads-down time.

Combining prior art elements according to known methods to yield predictable results is a rationale to support a conclusion of obviousness. See MPEP 2143(A).

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Simple substitution of one known element for another to obtain predictable results will support a conclusion of obviousness. See MPEP 2143 (B).

Regarding claim 6, Murray, as modified above by Riley clearly teaches the input and simultaneous display of the user generated flight plan modification (see Riley at fig. 2).

Regarding claims 7 and 8, Murray discloses that At any point in the process of selecting an alternate destination, editing the routing options, or editing the operating conditions, the pilot may immediately divert to the automatically- or manually-selected alternate destination by pressing key 6R. As shown on screen 300, key 6R is labeled with the text "DIVERT NOW" under the identifier of the airport that is currently selected for diversion. Pushing the divert now key 6R causes the text next to key 6R to change to "SELECTED" as shown in a representative screen 302. Additionally, the word "MOD" appears in the screen title to indicate that a flight plan modification has been selected. Pressing the divert now key causes a route modification to be loaded into the flight management computer. To implement the change in flight plan to the alternate destination, the pilot must press the EXEC function key 48. Pressing the EXEC key loads the alternate destination into the flight management computer, and starts the aircraft on the desired diversion if lateral navigation (LNAV) and autopilot are engaged. It will be appreciated that the minimal amount of time and keyed entry required by the pilot to implement a diversion improves the response time of the pilot in an emergency requiring a diversion (column 18 lines 39-60).

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Regarding claim 10, Murray discloses that the invention is drawn toward modification to an aircraft's flight management computer (FMC) system to incorporate an improved alternate destination planner in the FMC. The alternate destination planner disclosed herein provides a pilot with a list of alternate landing destinations based on a navigational database of available landing sites stored in the memory of the FMC, or based on a list of alternate destinations transmitted to the aircraft from a ground station (column 3 lines 31-38).

Regarding claims 11 and 12, Fig. 8 of Murray clearly discloses utilizing received avionic data with simultaneous display of the current aircraft flight plan, as well as the lateral map image of the aircraft.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN M. DAGER whose telephone number is (571)270-1332. The examiner can normally be reached on 0830-1800 (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JD

08 October 2009

/Jack W. Keith/
Supervisory Patent Examiner, Art Unit 3663